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April 2005  
RG-424

# Handbook for Drought Contingency Planning for Retail Public Water Suppliers

Water Supply Division

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recycled paper

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TEXAS COMMISSION ON ENVIRONMENTAL QUALITY



# Handbook for Drought Contingency Planning for Retail Public Water Suppliers

Prepared by  
Water Supply Division

RG-424  
April 2005



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# 1. Introduction

## Purpose of this Handbook

The purpose of this handbook is to provide guidance and suggestions to retail public water suppliers with regard to the preparation of drought contingency plans.

This handbook is also intended to provide a single source of guidance on drought contingency planning that can be used by retail public water suppliers in meeting the requirements of either the Texas Commission on Environmental Quality (TCEQ) or the Texas Water Development Board (TWDB). State law provides that water conservation and drought contingency plans are to be submitted to the TCEQ in support of applications for new or amended permits to use surface waters of the state. The TWDB also requires most state financial assistance applicants for water related projects to develop water conservation and drought contingency plans.

Finally, **in September 2004, the TCEQ adopted new rules.** These rules require drought contingency plans to include specific, quantified targets for water use reductions to be achieved during periods of water shortage and drought. The rules additionally specify the minimum elements and submittal requirements for drought contingency plans. The guidelines and suggestions presented in this handbook are intended to help retail public water suppliers comply with these rules, which are summarized throughout the handbook and provided in their entirety in Appendix A.

In addition to the guidance provided by this handbook, the appendices include TCEQ rules for drought contingency planning, a model drought contingency plan, and an example ordinance and resolution for adoption of the plan.

## Handbook's Definition of a Retail Public Water Supplier

For the purposes of this handbook, retail public water suppliers are considered to be those entities that meet the TCEQ's definition of "community water systems." These are systems that have the potential to serve at least 15 residential service connections on a year-round basis or which serves at least 25 residents on a year-round basis. Community water systems include municipal water utilities, various types of districts established under state law (example: municipal utility districts), and investor owned water utilities.

Some public water suppliers also provide either untreated or treated water on a wholesale basis to other public water suppliers, which in turn provide retail water service to their customers. These water suppliers are encouraged to review the *TCEQ Handbook on Drought Contingency Planning for Wholesale Public Water Suppliers* (RG-426).

## Drought Happens

Recurring drought is a natural part of Texas' highly variable climate. Unlike other types of weather-related natural disasters, such as floods, droughts typically develop slowly, often almost imperceptibly over a period of months or even years. But like floods, drought can have widespread and far-reaching impacts on society, the economy, and the environment. In meteorological terms, drought is simply a prolonged period of below normal rainfall. While droughts cannot be prevented or managed per se, recent statewide droughts in Texas, such as that which occurred during 1996, have underscored the need for better preparation for responding to droughts. Such preparedness is particularly critical to the effective management of our most precious and essential natural resource - water.

Drought and other uncontrollable circumstances can severely disrupt the normal availability of water and lead to water shortages. A water shortage occurs when there is an imbalance between the supply of water and the demand for water over some period of time. Short-term drought-related water shortages are often the result of both decreased water supply due to below normal rainfall and increased water demands, which can speed the depletion of water supplies. Because most communities rely on local water supply sources, the conditions that define a water shortage tend to be very location specific.

For example, in one community, hydrologic conditions and water demands may be such that a shortage is considered to exist when the supplies are at 75 percent of "normal," while in another community, a water shortage might not exist until supplies reach 25 percent of normal. Even where the water supply itself is adequate, a water supply system may not have adequate capacity to meet the higher than normal peak water demands that typically occur during drought. In such situations, there is often a significantly higher risk of water system outages due to equipment failures. During peak water demand periods, inadequate system capacity may also result in low water pressure thereby increasing the risk of contamination due to back flow and may impair fire fighting capabilities. Also, other types of natural and man-made disasters can damage water facilities or contaminate water supplies thereby creating short-term water supply emergencies.

***TCEQ rules require retail public water suppliers to develop drought contingency plans that address the following situations:***

- ***Reduction in available water supply up to a repeat of the drought of record,***
- ***Water production or distribution system limitations,***
- ***Supply source contamination, or***
- ***System outage due to the failure or damage of major water system components (example: pumps).***

***Title 30, Texas Administrative Code, Chapter 288, Subchapter B (288.20) (a) (1) (E) (i-iv)***

## **Drought Contingency Planning and Comprehensive Water Resources Management**

Traditionally, water suppliers have planned for droughts by focusing on water supply management strategies, such as supply development and expansion of water production and distribution capacity. Implicit in this approach is an orientation toward “risk avoidance” whereby the risk of shortage is reduced to near zero through supply-side strategies. This approach has served the public well. The great majority of Texas’ population is served by water suppliers that are able to withstand even severe droughts with little or no inconvenience or impact to their customers. Increasingly, however, water suppliers are coming to recognize the economic and environmental limits of a purely supply-side approach to drought and are adopting “risk management” strategies to cope with future droughts.

In terms of water supply, a risk management approach seeks to maintain an acceptable level of risk of water shortage through a combination of long-term water supply and system capacity development, long-term water conservation measures, and short-term supply-side and demand-side measures that are implemented only in response to drought-induced water shortages and other emergency conditions. Major components of the risk management approach are the best management practices utilized for accomplishing water use reductions during periods of water shortages and drought. Seen in this context, drought contingency planning is best viewed as a part of, not distinct from, comprehensive long-term water resources planning and management.

## **Drought Contingency Planning and Water Conservation**

It is common for the public, and even for the operators of public water systems, to confuse water conservation planning and drought contingency planning. The TCEQ defines a water conservation plan as “*a strategy or combination of strategies for reducing the volume of water withdrawn from a water supply source, for reducing the loss or waste of water, for maintaining or improving the efficiency in the use of water, for increasing the recycling and reuse of water, and for preventing the pollution of water.*” The emphasis and basic goal of a water conservation plan is to achieve lasting, long-term improvements in water use efficiency. For example, water-saving plumbing fixtures and low water use landscaping are intended to achieve long-term permanent reductions in water use.

By comparison, the TCEQ defines a drought contingency plan as “*a strategy or combination of strategies for temporary supply management and demand management responses to temporary and potentially recurring water supply shortages and other water supply emergencies.*” Drought response measures in this context are synonymous with best management practices and typically include voluntary or mandatory restrictions on certain water uses (example: lawn watering), water allocation, or the temporary use of an alternative water supply. The underlying philosophy of drought contingency planning is that:

- While often unpreventable, short-term water shortages and other water supply emergencies can be anticipated;

- The potential risks and impacts of drought or other emergency conditions can be considered and evaluated in advance of an actual event; and, most importantly,
- Response measures and best management practices can be determined with implementation procedures defined, again in advance, to avoid, minimize, or mitigate the risks and impacts of drought-related shortages and other emergencies.

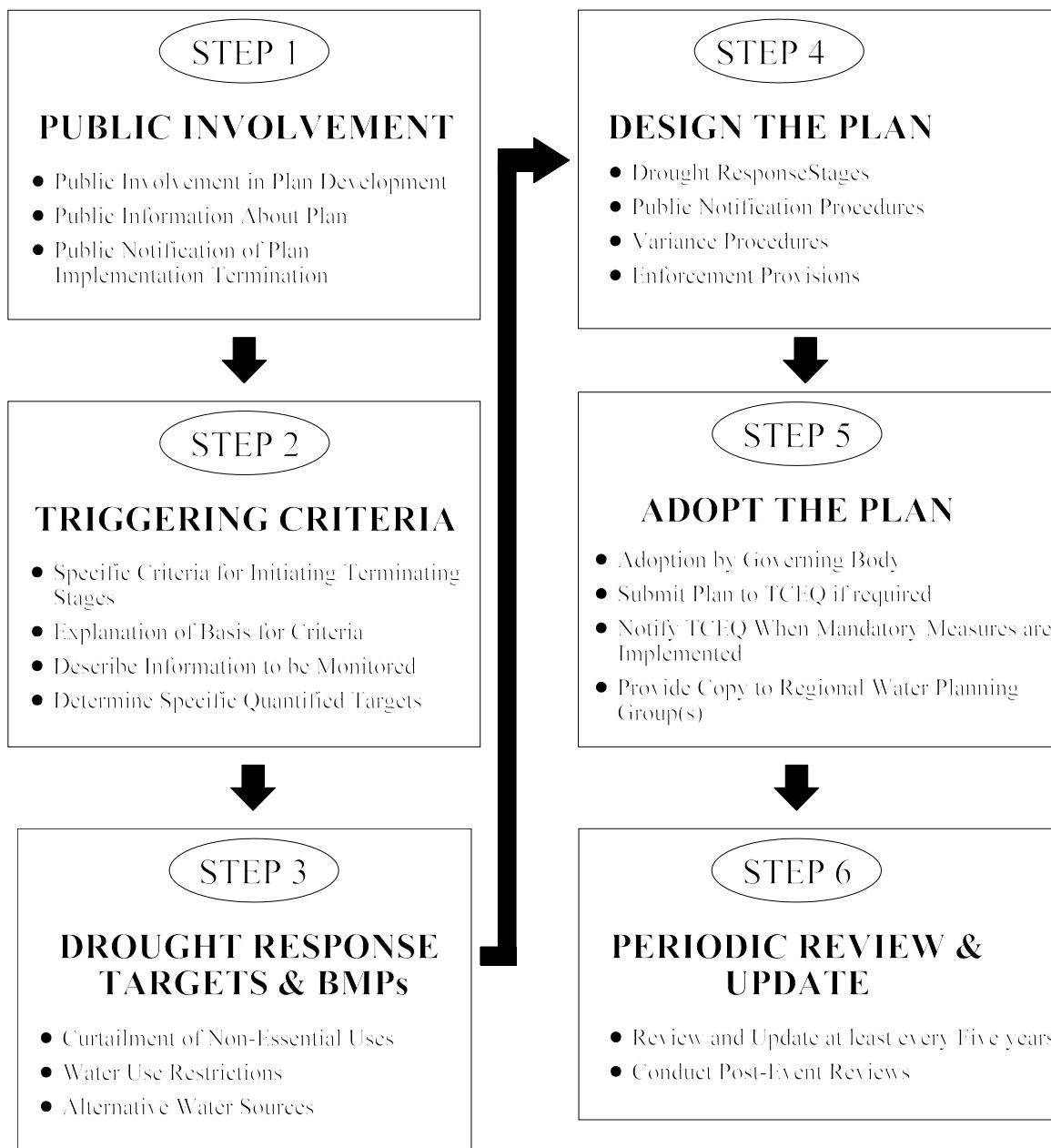
For public water suppliers, the basic goal of drought contingency planning is to ensure an uninterrupted supply of water in an amount sufficient to satisfy essential human needs. Secondary objectives are to minimize, to the extent possible, adverse impacts on quality of life, the economy, and the environment. Drought contingency plan goals and objectives are achieved through the implementation of drought response measures. A drought response measure becomes a specific best management practice for a supplier if the activity is successful in achieving the desired water reduction.

## **2. Key Steps in Preparing a Drought Contingency Plan**

From the outset it should be emphasized that a “good” drought contingency plan is one that is tailored to the unique conditions and circumstances of an individual water supplier. With few exceptions, no two water systems face identical circumstances or conditions with respect to water supply availability, water demand characteristics, or the capacity and limitations of the water system. Even water suppliers that rely on a common water source may have a different risk of shortage due to differences in water rights or the quantity of water available under contract from a wholesale supplier. Since no two suppliers face identical conditions, the best management practices for one supplier may be completely different than the best management practices for another supplier. However, despite the many differences among water suppliers, there is a fairly standard six-step process that can be followed to develop an effective drought contingency plan and satisfy State requirements. This process is summarized in Figure 1.

**Figure 1.**

# Drought Contingency Plan Process for a Retail Public Water Supplier



## **Step 1: Public Involvement**

The starting point for the development of a drought contingency plan is to provide the public with an opportunity to participate directly in the planning process. To a large degree, the successful implementation of a drought contingency plan depends upon how well the public understands the need for the plan, the goals of the plan, as well as the degree to which the public complies with the drought response measures called for by the plan. Effective customer involvement can determine whether a response measure is an effective best management practice for a particular supplier. It is therefore important to give the public a say in how the plan is designed and under what conditions it will be implemented.

There are a number of ways to involve the public in the planning process. Common methods include providing public notice that a drought plan is being prepared, forming a citizen's advisory committee or task force, holding public meetings, conducting customer surveys, and distributing the draft plan for public review and comment prior to adoption. Also, it is advisable to seek input directly from large-volume water customers and from other groups most likely to be directly impacted during implementation of the plan (example: landscape maintenance contractors, owners of car washes, golf course operators). Often these customers and groups can help devise ways to meet the objectives of the drought contingency plan in a way that minimizes impacts on their operations or businesses.

An active, ongoing effort to inform the public about the drought contingency plan is also important, particularly prior to and during the actual implementation of the plan. Experience has shown that a well-informed public is generally more willing to heed requests to voluntarily conserve or alter water use patterns, for example, and will be more likely to comply if mandatory water use restrictions become necessary. The information provided should include a description of the conditions that will trigger implementation of the plan and a description of what can be expected once the drought contingency plan is in effect (example: response measures, enforcement provisions, etc.). It is also advisable to provide practical "consumer" information that will help water users comply with the plan. For example, information about restrictions on lawn watering might be accompanied with information about proper lawn watering practices. Common approaches to educating the public about the utility's drought contingency plan include utility bill inserts, articles in local newspapers, public service announcements, and advertisements in the local media.

When thinking about public involvement in the drought planning process and ongoing education of the public about the drought contingency plan, consideration should be given to the potential benefits of a regional approach whereby all of the public water suppliers within a region adopt a similar plan. In some areas of Texas, numerous individual water suppliers may rely on a common water supply source and therefore would be more or less equally affected by a drought. In such circumstances, a common regional drought contingency plan might enhance communication with the public, particularly to the extent that the public relies on regional news media for information. Conversely, confusion can arise when there are differing requirements among local jurisdictions within the same regional media market.

**TCEQ rules require public involvement, public information, and coordination with Regional Water Planning Groups:**

- *Provision shall include to actively inform the public and affirmatively provide opportunity for public input into the preparation of the plan.*
- *Provision shall be made for a program of continuing public education and information regarding the drought contingency plan.*
- *The drought contingency plan must document coordination with the regional water planning groups for the service area of the retail public water supplier to ensure consistency with the appropriate approved regional water plans.*

*Title 30, Texas Administrative Code, Chapter 288, Subchapter B (288.20) (a) (1) (A-C)*

## **Step 2: Assess Vulnerability to Drought and Define Triggering Criteria**

A common feature of drought contingency plans is a structure that allows increasingly stringent drought response measures to be implemented in successive stages as water supply or water demand conditions worsen. Most drought contingency plans achieve this by defining three to five drought response stages and include “triggering” criteria for both initiating and terminating each stage. This measured or gradual approach allows for timely and appropriate action as a water shortage or other condition develops, thereby minimizing the possibility of overreacting or underreacting. More will be said about drought response stages in Steps 3 and 4.

Triggering criteria that are based on water system-specific indicators have been shown to improve drought response effectiveness. With such triggers, decisions about when to implement and terminate drought response measures are not made arbitrarily. Triggering criteria are intended to ensure that timely action is taken in response to a developing drought situation and that the response is appropriate to the level of severity of the situation. Without such benchmarks, the risk of underreacting or overreacting to the situation increases. As previously noted, public understanding and acceptance of drought response measures is also enhanced if the public understands the circumstances under which action will be taken.

***The drought contingency plan must include a description of the information to be monitored by the water supplier, and specific criteria for the initiation and termination of drought response stages, accompanied by an explanation of the rationale or basis for such triggering criteria.***

***Title 30, Texas Administrative Code, Chapter 288, Subchapter B (288.20) (a) (1) (D)***

It cannot be overemphasized that triggering criteria should be specific to each water supplier and should be based on an assessment of each water system's vulnerability. This should include an assessment of both the adequacy and reliability of the water supply itself, as well as a determination of the conditions under which a water shortage can be said to exist. It is also important to evaluate the adequacy and reliability of water production, storage and distribution facilities under drought conditions. Recent droughts have shown that it is more common for water systems in Texas to experience *capacity and equipment* problems during periods of unusually high peak water demands, even during mild droughts, than it is for systems to experience actual water supply shortages.

For water systems that are "capacity constrained," triggering criteria are typically defined in terms of the "safe" operating capacity of the water system. This can be thought of as the amount of water that can be reliably produced and distributed without undue stress on facilities and equipment or significant degradation of service (example: low water pressure). The "vulnerability assessment" in such cases should focus on identifying any "weak link" in the water system. System components to consider include water diversion or pumping capacity, water treatment plant capacity, treated water pumping capacity, and water storage capacity. Often, through experience, water utility operators know how a system and its individual components perform under stress and can use this knowledge to develop drought response triggering criteria. Another approach is to assess the safe operating capacity of the system and identify system constraints through computer simulation modeling. There are a number of off-the-shelf, PC-based software programs that are used in the design of water systems that can also be used to identify capacity constraints and in the development of triggering criteria keyed to such constraints.

Triggering criteria based on water system capacity indicators should also be based on readily available data and should be easily understood by the public. For example, implementation of best management practices through a drought response stage might be initiated when water demand equals or exceeds some value or percentage of the system's safe operating capacity over some defined period of time (example: 40 million gallons per day for three consecutive days or 45 million gallons on a single day).

In some circumstances it may also be appropriate to use multiple parameters for triggering criteria. For example, implementation of a particular best management practice through a drought response stage might occur when two or more supply conditions occur simultaneously (example: low stream flow and low reservoir conditions). Similarly, for water systems with capacity constraints, one might

use daily water demand and a minimum threshold for treated water storage in combination. Multiple parameters for triggering criteria may also be necessary if a particular water system is at risk of water shortage and also has system capacity problems.

As indicated, the drought contingency plan should also specify the criteria for terminating each response stage. Typically these criteria are based on a lessening of the severity of the conditions that triggered implementation of a response stage, or the return to “normal” supply or demand conditions.

TCEQ rules require drought response triggering criteria to be specified along with an explanation of the rationale or basis for selecting those criteria. The explanation need not be complex and, as with other features of the plan, should be understandable by the public. Operator knowledge and experience with how a water system performs during drought is important information. However, to be effective a drought contingency plan should not be based on haphazard judgments. If at all possible, technical assistance should be obtained from experienced professionals who are qualified to perform the assessments of hydrologic conditions and/or water system capabilities.

Finally, to the extent possible, triggering criteria should be expressed in quantitative terms without ambiguity. If certain predetermined conditions occur, certain prescribed actions will follow. However, as a practical matter, drought contingency plans should also provide some discretion in decision making by the responsible official regarding the initiation and termination of drought response stages. It might be that while a trigger level based on water supply or water demand has been reached, other factors indicate a need to wait before taking action. For example, a near-term weather forecast might indicate a high probability of significant rainfall occurring, which would improve supply conditions and/or ease water demands. In such a situation, it would be prudent to delay the decision in order to avoid the possibility of initiating a drought response stage only to then terminate that stage in a day or two. The decision-maker therefore needs to weigh the risks of delay against the potential public relations problems caused by “false alarms.”

With regard to water supply vulnerability, triggering criteria should be based on an analysis of how a particular water supply source is impacted by droughts of varying severity. In Texas, the common approach to estimating water supply availability is to estimate the quantity of water that can be provided from a given supply source during a repeat of the drought of record for that area. The drought of record is determined by historical hydrologic records and is defined as the period of time when the amount of water in the supply source is at its lowest levels. As noted previously, TCEQ rules require drought contingency plans to address water supply conditions up to a repeat of the drought of record.

The assessment of water supply availability and reliability during drought should be based on a statistical analysis, often in conjunction with simulation modeling, of the period of hydrologic record for the water source. Such analyses provide useful information about the frequency and duration of certain supply conditions, as they occurred in the past, which can then be used to assess the risk of those conditions reoccurring in the future. Limited guidance and technical assistance with such analyses is available from the TCEQ. However, in many cases it is advisable to obtain the expert assistance of a qualified hydrologist.

It is also important to define the conditions under which a water supply shortage can be said to exist. As noted previously, a water shortage is a function of the available supply, water demand, and time. One common measure of water shortage might be an estimate of how long a given amount of water will last under certain water demand conditions with varying assumptions about replenishment of the supply (example: low flow or low-recharge). This will vary from one community to another. For example, based on a statistical analysis of the hydrologic record or past experience, one

***The drought contingency plan must include drought or emergency response stages providing for the implementation of measures to respond to a reduction in available water supply up to a repeat of the drought of record.***

*Title 30, Texas Administrative Code, Chapter 288, Subchapter B (288.20) (a) (1) (E) (i)*

community might consider a one-year supply as a shortage condition whereas another community might consider a three-month or six-month supply as a shortage condition. Triggering criteria, then, might be set at corresponding measures of supply, such as the actual quantity of water remaining in the source or the percentage of supply remaining. Whatever measures are used as triggering criteria, they should be based upon information that can be readily monitored by the water supplier and easily understood by the public.

***The drought contingency plan must include specific, quantified targets for water use reductions to be achieved during periods of water shortage and drought. The entity preparing the plan shall establish the targets. The goals established by the entity are not enforceable.***

*Title 30, Texas Administrative Code, Chapter 288, Subchapter B (288.20) (a) (1) (F)*

In addition to the triggering criteria mentioned above, the 2004 revised TCEQ rule requirements also state that the drought contingency plan must include specific and quantified targets for water use reductions to be achieved during periods of water shortage and drought. The entity preparing the plan shall establish the targets. The targets should be set to achieve a specific percentage reduction in the total water use or daily demand. The goals established by the entity are not enforceable.

Many public water suppliers in Texas receive all or a portion of their water supply under contract from a wholesale water supplier. In most cases, the quantity of water available is a fixed annual amount that is backed by the firm yield or the system yield of the wholesale supplier's water supply source(s). However, State law provides general authority to water suppliers to allocate water supplies, limit diversions, or reduce water deliveries on a pro rata basis during times of shortage. Consequently, wholesale water supply contracts may specify certain conditions under which the amount of water available may be reduced or curtailed. Public water suppliers that receive all or a portion of their water supply from a wholesale supplier should therefore consider such contractual limitations on supply availability and ensure that their drought contingency plan is consistent with

their wholesale supplier's drought contingency plan. Specifically, the triggering criteria in the public water supplier's plan should be keyed to any triggering criteria contained in the wholesale water contract or the wholesale supplier's drought contingency plan.

*Any public water supplier that receives all or a portion of its water supply from another water supplier shall consult with that supplier and shall include in the drought contingency plan appropriate provisions for responding to reductions in that water supply.*

*Title 30, Texas Administrative Code, Chapter 288, Subchapter B (288.20) (a) (3)*

### **Step 3: Determine Drought Response Targets and Best Management Practices for Reducing Water Use**

TCEQ rules require drought contingency plans to specify the response measures or actions that will be implemented when predetermined triggering criteria are met. The response measures are the best management practices for the water supplier for reducing water use within each particular response stage. Generally, the types of management measures employed for each response stage should be related to the severity of the water supply or demand conditions and to specific targets for each stage. For drought contingency plans that are designed to address water shortage conditions, targets are typically expressed in terms of specific and quantified reductions in withdrawals from the supply source. For plans that are designed to address system capacity constraints, targets are usually expressed in specific and quantified reductions in water demands. In either situation, the assessments performed in the previous step should provide insights into how much withdrawals or demand will need to be reduced for each stage of the drought contingency plan.

*The drought contingency plan must include the specific water supply or water demand management measures to be implemented during each stage of the plan including, but not limited to, the following:*

- *curtailment of nonessential water uses; and*
- *utilization of alternative water sources and/or alternative delivery mechanisms with the prior approval of the TCEQ executive director as appropriate (e.g., interconnection with another water system, temporary use of a non-municipal water supply, use of reclaimed water for non-potable purposes, etc.).*

*Title 30, Texas Administrative Code, Chapter 288, Subchapter B (288.20) (a) (1) (G) (i-ii)*

Drought contingency plans should include, as appropriate, both demand management and supply management measures. Both demand and supply management measures included in the drought contingency plan should be the best management practices for the public water supply to achieve the targeted water use reductions. Best management practices that are demand management measures are designed to reduce water use while best management practices that are supply management measures typically can be taken by the supplier to better manage the available water supply, as well as the use of backup or alternative water sources. Plans that are designed for water shortage conditions should look at best management practices for both supply and demand management while those designed to address system capacity constraints typically rely only on demand management measures. Examples of each are provided in Tables 1 and 2.

<b>Table 1: Examples of Best Management Practices for Reduction in Water Demand</b>
Restrictions or bans and enforcing restrictions as on nonessential water uses such as lawn watering, car washing, hosing down pavement, use of non-recirculating ornamental fountains, swimming pool filling
General prohibitions on water waste (example: allowing water to run)
Use of water rate incentives or penalties (example: surcharges for excess water use)
Water rationing (example: water allocation on a per capita or per household basis)
Requiring storage facilities to be filled during non-peak times for fire flow

<b>Table 2: Examples of Best Management Practices for Water Supply Management</b>
Modification of water utility operating (example: leak detection and repair)
Use of water supply reserves (example: dead storage of a reservoir, use of back-up groundwater supplies)
Use of reclaimed water (example: landscape irrigation, wastewater treatment plant filter backwash)
Acquisition of alternative water supplies (example: interconnection with a neighboring water supplier , temporary water purchases, emergency water rights transfer)
Keeping adequate inventory of equipment for replacement such as pumps, pipes and so on.

The most commonly used best management practices are those targeted at reducing seasonal outdoor water uses, particularly lawn watering. These uses are typically considered to be discretionary or nonessential; are highly visible and therefore relatively easy to monitor; and often are a substantial component of water demand, particularly during the summer months when drought conditions are likely most severe. For example, seasonal (summer) water demand, which is considered to be the amount of water use over “base” or winter levels, typically accounts for 20-30 percent of total municipal water demand on an annual basis. More significantly, seasonal uses may account for 50

percent or more of peak day water use. Further, during a drought it is common for seasonal water use to increase by an additional 20 percent or more relative to “normal year” seasonal demand levels.

Given the significance and visibility of lawn watering as the predominant component of seasonal use, best management practices in drought contingency plans typically prescribe time-of-use and other restrictions on lawn watering. This often involves placing water users on a schedule which allows for staggered lawn watering days, as well as restrictions on the times during the day when lawns can be watered. For convenience, many water suppliers institute an alternate-day lawn watering schedule whereby water users are allowed to water every other day based on the last digit of their street address. While easy to explain to the public and easy to monitor, it *is strongly recommended that this alternate-day approach not be used*. In many situations it has been shown that both peak day and overall water use actually increase under an alternate-day, “odd-even” lawn watering schedule. This tendency to increase water use rules out the use of the alternate-day lawn watering in a response stage since it is not a best management practice.

Without an aggressive public information effort to counter that effect, many customers will begin watering their lawns every other day even though it may not be necessary. Horticulturists commonly advise that a properly maintained landscape should only require a thorough supplemental irrigation every five to seven days, even during drought. While soil conditions and the type of grass are critical to any lawn’s ability to survive with reduced watering, lawn watering restrictions should be based on general knowledge of prevailing conditions in the utility’s service area.

A twice-a-week watering schedule is a recommended best management practice. For example, residences with street addresses ending in even numbers are allowed to water on Sundays and Thursdays and those with addresses ending in odd numbers are allowed to water on Saturdays and Wednesdays. This schedule, coupled with allowances for “anytime watering” with a hand-held hose, bucket, or drip irrigation system, should provide most users with adequate opportunity to maintain both a healthy and attractive landscape. Note that in this alternative, “odd-even” refers only to the address-based division of customers and not to the days on which lawn watering is allowed.

Another effective best management practice that is becoming common is a water rate surcharge. This price adjustment can take the form of significantly higher rates for water use in excess of a specified base amount or a temporary increase in commodity charges. Rate surcharges in particular can be viewed as either a positive incentive for compliance with water use restrictions or as a way to penalize those that use excessive amounts of water. Rate surcharges have the added benefit of reducing the need to actively monitor compliance with and enforce prescriptive water use restrictions. Surcharges also shift some of the cost of providing peak system capacity those whose water use most directly requires it. During the last major drought that plagued much of California in the early 1990’s, many water suppliers used steep water rate surcharges in tandem with water use restrictions and reported overall reductions in water use of 25 to 30 percent. It is important to note that water rate surcharges or rate adjustments can also be used to generate additional revenue to offset any lost revenues associated with reduced water sales. TCEQ rules which apply to investor-owned utilities include provisions for revenues resulting from rate surcharges imposed as part of a drought contingency plan.

## **Step 4: Design the Plan**

Once triggering criteria, specific and quantified targets, response stages, and best management practices for reducing water use have been identified, the next step is to develop the basic structure of the drought contingency plan. As previously noted, drought contingency plans typically provide for the implementation of best management practices for reducing water use in successive stages. The idea is to implement management practices that are geared to the severity of the situation with the hope that actions taken in one stage will be sufficient to stabilize supply and/or demand conditions and avoid the need to progress to another response stage with more stringent measures. Also, best management practices are usually cumulative, so that implementation of certain measures prescribed in one stage continue in subsequent stages.

It is recommended that drought contingency plans provide three to five response stages for the implementation of best management practices. Plans with fewer than three stages often do not provide enough flexibility to respond appropriately to water supply or demand conditions of varying severity. Also, the transition between stages may be too great, for example, moving from an initial stage of voluntary water conservation to strict water allocation without an intervening stage of more moderate drought response measures. Experience has shown that public compliance with best management practices is greater when such measures are introduced gradually in stages. Experience also suggests that drought contingency plans with more than five stages are difficult to administer inasmuch as the “spread” of the triggering criteria between stages may not allow adequate time for the public to understand what is required in one stage before the next stage is triggered.

Whether designed to address water supply shortage conditions or water system capacity constraints, drought contingency plans should also include a stage which prescribes best management practices for emergency conditions caused by depletion of the water source, damage to facilities, equipment failure, or contamination of the supply. Typically, this would include notification of the public and instructions regarding the use of alternative drinking water supplies (example: bottled water) and precautions to take when water service resumes (example: “boil water” notice). Whenever a public water supplier experiences an “outage,” TCEQ rules require that the utility immediately notify the TCEQ, which will then notify other agencies and coordinate assistance through the Texas Department of Public Safety, Division of Emergency Management. Table 3 illustrates the structure of a relatively simple five-stage drought contingency plan designed to address water shortage conditions for a hypothetical community with a surface water source and backup groundwater supplies.

When the best management practices implemented through drought response stages and triggering criteria are selected for a water system, the plan must include the specific and quantifiable targets for water use reductions to be achieved during periods of water shortage and drought as well.

**Table 3:**  
**Example Drought Contingency Plan for Community with**  
**a Surface Water Source and Backup Groundwater Supplies**

Drought Response Stage	Triggering Criteria	Target	Best Management Practice
<b>Stage 1</b> Mild Conditions	Reservoir levels at 50 percent of capacity	Raise public awareness of the supply situation	Raise public awareness of the supply situation and request voluntary reductions in non-essential water use
<b>Stage 2</b> Moderate Conditions	Reservoir levels at 40 percent of capacity	Reduce diversions from reservoir by 10 percent	Implement mandatory restrictions on certain non-essential water uses
<b>Stage 3</b> Severe Conditions	Reservoir levels at 30 percent of capacity	Reduce diversions from reservoir by 25 percent	Implement ban on certain non-essential water uses and water rate surcharge for excessive use
<b>Stage 4</b> Critical Conditions	Reservoir levels at 15 percent of capacity	Reduce diversions from reservoir by 50 percent	Continue ban on non-essential water uses, increase water rate surcharge, activate back-up wells
<b>Stage 5</b> Emergency Conditions	System outage due to depletion of water supply or equipment failure	Discontinue all water system operations	Initiate emergency response procedures

Table 4 provides an illustration of a drought contingency plan for a hypothetical community with water system capacity constraints.

<b>Table 4:</b> <b>Example Drought Contingency Plan for Community with Water System Capacity Constraints</b>			
<b>Drought Response Stage</b>	<b>Triggering Criteria</b>	<b>Target</b>	<b>Best Management Practice</b>
<b>Stage 1</b> Mild Conditions	Initiate on May 1 <sup>st</sup> each year and terminate on September 30th	Raise public awareness of the situation	Raise public awareness of the situation and request voluntary reductions in non-essential water use
<b>Stage 2</b> Moderate Conditions	Total daily water demand equals or exceeds 90 percent of the system's safe operating capacity for three consecutive days or equals or exceeds 95 percent of system capacity on a single day	Reduce and maintain daily water demand at or below 90 percent of system capacity	Initiate mandatory restrictions on certain non-essential water uses (example: lawn watering limited to certain days and times)
<b>Stage 3</b> Severe Conditions	Total daily water demand equals or exceeds 95 percent of the system's safe operating capacity for three consecutive days, or equals or exceeds 100 percent of capacity on a single day	Reduce and maintain daily water demand at or below 90 percent of system capacity	Initiate more stringent water use restrictions and a water rate surcharge for excessive use
<b>Stage 4</b> Emergency Conditions	System outage due to equipment failure	Discontinue all water system operations	Initiate emergency response procedures

In addition to defining the overall structure of the plan, it is also necessary at this step in the process to address various issues relating to the actual implementation and administration of the drought contingency plan. This includes developing written procedures for notifying the public about the initiation or termination of drought response stages. This can take the form of announcements through local media or even door-to-door notification during water supply emergencies (example: outages). In rural areas, signs along major roadways or marquees at businesses or churches might be used for notifying the public.

***The drought contingency plan must include the procedures to be followed for the initiation or termination of each drought response stage, including procedures for notification of the public.***

***Title 30, Texas Administrative Code, Chapter 288, Subchapter B (288.20) (a) (1) (H)***

It is also necessary to develop procedures for granting variances to measures prescribed by the plan. For example, some allowance might be provided for more frequent watering of newly installed landscapes or to allow certain water users (example: golf courses) to follow an alternative schedule for landscape irrigation. The public water supplier retains discretion to approve or disapprove any request for a variance, but customers must have a procedure available to request an exception to the restrictions. It should be incumbent on the customer to justify why they should not be held to the same standards for reduced water use that others are expected to meet.

***The drought contingency plan must include procedures for granting variances to the plan.***

***Title 30, Texas Administrative Code, Chapter 288, Subchapter B (288.20) (a) (1) (I)***

Finally, the drought contingency plan should also include explicit provisions for enforcement of any mandatory management practices. These include procedures for monitoring water user compliance with mandatory measures and penalties for violations. Typically, public water suppliers rely primarily on voluntary compliance and use utility staff to monitor compliance. Also, it is common for the public to report violations. Municipal water suppliers may use their municipal police force to enforce compliance with the drought contingency plan. Penalties for noncompliance can include fines, installation of a flow restrictor on a customer's water service line, and discontinuation of service for repeat violations. Typically, most water suppliers will provide a grace period of a day or two after mandatory measures are imposed and will issue warnings for a first offense. Also, as previously noted, water rate structure surcharges can be used to penalize excessive water use.

***The drought contingency plan must include procedures for the enforcement of mandatory water use restrictions, including specification of penalties (example: fines, water rate surcharges, discontinuation of service) for violations of such restrictions.***

***Title 30, Texas Administrative Code, Chapter 288, Subchapter B (288.20) (a) (1) (J)***

A model drought contingency plan for retail public water suppliers is provided in Appendix B.

## **Step 5: Adopt the Plan**

Before the plan development process can be considered complete, each water supplier's drought contingency plan must be formally adopted by the governing body of the entity. For municipal water systems, adoption would be by the city council as an ordinance. For other types of publicly-owned water systems (example: utility districts), plan adoption would be by resolution of the entity's board of directors adopting the plan as administrative rules. Examples of an ordinance and resolution are provided in Appendix C. For private investor-owned utilities, the drought contingency plan is to be incorporated into the utility's TCEQ-approved rate tariff.

A retail water supplier must notify the TCEQ by telephone at (512) 239-4691, or electronic mail at [watermon@tceq.state.tx.us](mailto:watermon@tceq.state.tx.us) prior to implementing mandatory stage and must notify in writing the Public Drinking Water Section at MC-155, P. O. Box 13087, Austin, Texas 78711-3087 within five working days.

*A wholesale or retail water supplier shall notify the executive director within five business days of the implementation of any mandatory provisions of the drought contingency plan.*

*Title 30, Texas Administrative Code, Chapter 288, Subchapter B (288.20) (b)*

Upon adoption of the plan, there are certain submittal requirements as shown below that are specified in TCEQ rules, 30 TAC 288, Subchapter C.

- For retail public water suppliers providing water service to 3,300 or more connections, the drought contingency plan must be submitted to TCEQ by May 1, 2005. Thereafter, any revised plans must be submitted to TCEQ within 90 days of adoption.
- Any new retail water suppliers providing water service to 3,300 or more connections shall prepare and adopt a drought contingency plan within 180 days of beginning operations and submit the plan to TCEQ staff within 90 days of adoption.
- Retail public water suppliers providing water service to less than 3,300 connections shall prepare and adopt a drought contingency plan by May 1, 2005. Such plans do not have to be submitted to TCEQ but must be available for inspection upon request by TCEQ staff.
- All public water suppliers are to provide a copy of their adopted drought contingency plan to the appropriate Regional Water Planning Group(s) for the region(s) within which the water supplier operates.

## **Step 6: Periodic Review and Update**

Each water supplier should periodically review and update its drought contingency plan. In particular, this review should focus on any required modifications in triggering criteria to reflect changed conditions. For example, barring any increase in available water supply, population growth and increasing water demand may increase a water supplier's vulnerability to drought. Triggering criteria might therefore be adjusted to initiate best management practices at a higher water supply level. Similarly, major additions of new water sources or improvements to water system facilities may significantly reduce vulnerability and therefore require a lower supply threshold or a higher demand threshold for triggering drought response measures. In addition to the TCEQ rules requiring that each supplier's drought contingency plan be updated no less than once every five years, the update process helps ensure that the utility's staff is familiar with the plan and that, in municipal and district utilities, elected officials have "bought in" to the plan as a part of their responsible oversight of the public water system.

*The retail public water supplier shall review and update, as appropriate, the drought contingency plan, at least every five years, based on new or updated information, such as the adoption or revision of the regional water plan.*

*Title 30, Texas Administrative Code, Chapter 288, Subchapter B (288.20) (c)*

Water suppliers are also encouraged to conduct a "post event" review of the plan to identify and correct any problems that may have arisen during the implementation of the drought contingency plan. Invariably, one can look back on the experience of implementing a drought contingency plan for lessons learned and improve the plan accordingly.

### **3. Where to Go for Additional Assistance**

#### **Technical Assistance and Plan Submittal**

For technical assistance with the preparation of a drought contingency plan contact:

**Resource Protection Team, MC 160**  
**Texas Commission on Environmental Quality**  
P.O. Box 13087  
Austin, TX 78711-3087  
512/239-4691  
[www.tceq.state.tx.us](http://www.tceq.state.tx.us)

**Note:** Those drought contingency plans that are required to be *submitted* to the TCEQ should be mailed to the Resource Protection Team at the TCEQ address indicated above.

#### **Regional Water Planning Groups**

As noted previously, once adopted, a copy of each water supplier's drought contingency plan is to be submitted to the appropriate Regional Water Planning Group(s). The Regional Water Planning Groups were established by the TWDB pursuant to Senate Bill 1 (75th Texas Legislature) and are responsible for the development of regional water management plans. Sixteen (16) regional water planning areas have been established by the TWDB (see Figure 2). For each region, an agency has been selected by the Regional Water Planning Group to act as its agent for administrative purposes. The names, addresses, and telephone numbers of each of these agencies is given below.

##### **Panhandle Region (A)**

Panhandle Groundwater Conservation District  
P.O. Box 637  
White Deer, TX 79097  
(806) 883-2501

##### **Region B**

Red River Authority  
900 8<sup>th</sup> St, Hamilton Building, Ste. 520  
Wichita Falls, TX 76308-6894  
(940) 723-8697

##### **Region C**

North Texas Municipal Water District  
P.O. Box 2408  
Wylie, TX 75098  
(972) 442-5405

##### **North East Texas Region (D)**

City of Kilgore  
P.O. Box 990  
Kilgore, TX 75663  
(903) 984-5081

##### **Far West Texas Region (E)**

P. O. Box 668  
Alpine, TX 79831  
(915) 364-2244

##### **Upper Colorado Region (F)**

Colorado River Municipal Water District  
P.O. Box 869  
Big Spring, TX 79721-0869  
(432) 267-6341

**Brazos Region (G)**

City of Abilene  
P. O. Box 60  
Abilene, TX 79604-0060  
(325) 676-6386

**East Texas Region (I)**

8740 FM 226  
Nacogdoches, TX 75961  
(936) 569-1284

**Lower Colorado Region (K)**

Aqua Water Supply Corporation  
P.O. Drawer P  
Bastrop, TX 78602  
(512) 303-3943

**Rio Grande Region (M)**

Lower Rio Grande Valley Development Council  
311 North 15 St.  
McAllen, TX 78501-4705  
(956) 682-3481

**Llano Estacado Region (O)**

P. O. Box 2426115  
Lubbock, TX 79408  
(806) 765-8851

**Houston Region (H)**

San Jacinto River Authority  
P.O. Box 329  
Conroe, TX 77305-0329  
(936) 588-1111

**Plateau Region (J)**

700 Main Street  
Kerrville, TX 78028  
(830) 792-2216

**South Central Texas Region (L)**

San Antonio River Authority  
P. O. Box 839980  
San Antonio, TX 78283  
(210) 227-1373

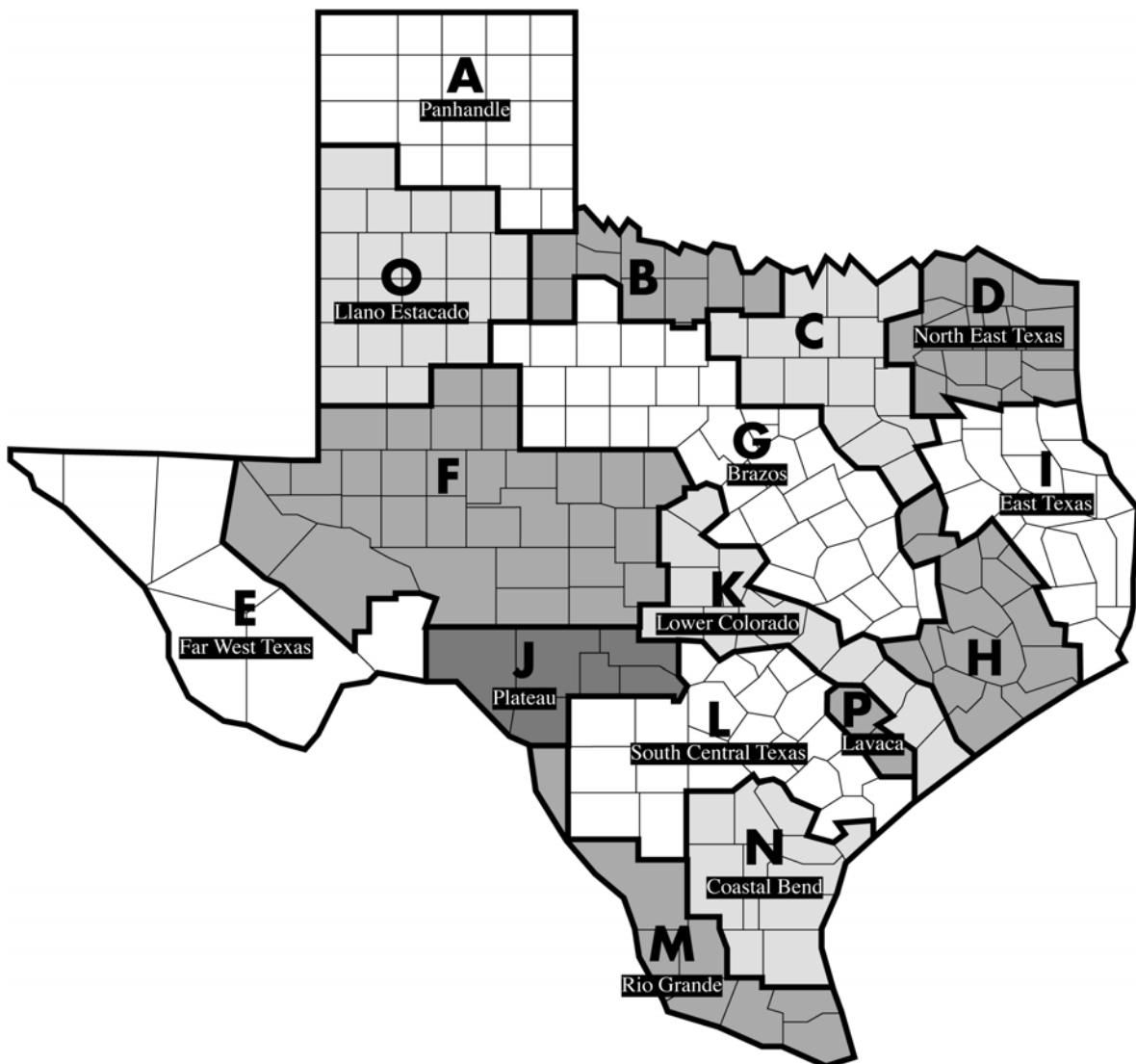
**Coastal Bend Region (N)**

South Texas Water Authority  
P. O. Box 1701  
Kingsville, TX 78364  
(361) 692-0337, ext 12

**Lavaca Region (P)**

W. Main Rm. 207  
Edna, TX 77957  
(361) 782-2352

**Figure 2. Regional Water Planning Areas – Texas Water Development Board**  
(The 16 regions are identified by the letters A-P,  
12 regions have names designated)



## **Water Supply Emergencies**

In the event of an imminent or actual water supply emergency due to either a loss of water supply source and/or system outage due to physical plant failure, retail public water suppliers should seek assistance through the state emergency management system.

In such situations, water utilities should immediately contact the Emergency Management Coordinator or the chief elected official (example: mayor, county judge) of the local jurisdiction affected by the emergency. Local governments have the primary responsibility for the initial emergency response, but may request supplemental state assistance by contacting the appropriate Disaster District or the Division of Emergency Management at the Texas Department of Public Safety. Water utilities should also immediately notify the Texas Commission on Environmental Quality.



## **APPENDIX A:**

# **TCEQ Rules for Drought Contingency Plans**

- **Subchapter B: Drought Contingency Plans §§288.20 - 288.22**
- **Subchapter C: Required Submittals §288.30**



## **SUBCHAPTER B: DROUGHT CONTINGENCY PLANS**

### **§§288.20 - 288.22**

#### **STATUTORY AUTHORITY**

The amendments are adopted under TWC, §5.103, which provides the commission with the authority to adopt any rules necessary to carry out its powers and duties under the provisions of the TWC or other laws of this state; and TWC, §11.1272, which provides the commission with the authority to require wholesale and retail public water suppliers and irrigation districts to develop drought contingency plans; and Texas Government Code, §2001.006, which authorizes state agencies to adopt rules or take other administrative action that the agency deems necessary to implement legislation.

#### **§288.20. Drought Contingency Plans for Municipal Uses by Public Water Suppliers.**

- (a) A drought contingency plan for a retail public water supplier, where applicable, must include the following minimum elements.
  - (1) Minimum requirements. Drought contingency plans must include the following minimum elements.
    - (A) Preparation of the plan shall include provisions to actively inform the public and affirmatively provide opportunity for public input. Such acts may include, but are not limited to, having a public meeting at a time and location convenient to the public and providing written notice to the public concerning the proposed plan and meeting.
    - (B) Provisions shall be made for a program of continuing public education and information regarding the drought contingency plan.
    - (C) The drought contingency plan must document coordination with the regional water planning groups for the service area of the retail public water supplier to ensure consistency with the appropriate approved regional water plans.
    - (D) The drought contingency plan must include a description of the information to be monitored by the water supplier, and specific criteria for the initiation and termination of drought response stages, accompanied by an explanation of the rationale or basis for such triggering criteria.
    - (E) The drought contingency plan must include drought or emergency response stages providing for the implementation of measures in response to at least the following situations:
      - (i) reduction in available water supply up to a repeat of the drought of record;
      - (ii) water production or distribution system limitations;
      - (iii) supply source contamination; or
      - (iv) system outage due to the failure or damage of major water system components (example: pumps).

(F) The drought contingency plan must include specific, quantified targets for water use reductions to be achieved during periods of water shortage and drought. The entity preparing the plan shall establish the targets. The goals established by the entity under this subparagraph are not enforceable.

(G) The drought contingency plan must include the specific water supply or water demand management measures to be implemented during each stage of the plan including, but not limited to, the following:

- (i) curtailment of non-essential water uses; and
- (ii) utilization of alternative water sources and/or alternative delivery mechanisms with the prior approval of the executive director as appropriate (example: interconnection with another water system, temporary use of a non-municipal water supply, use of reclaimed water for non-potable purposes, etc.).

(H) The drought contingency plan must include the procedures to be followed for the initiation or termination of each drought response stage, including procedures for notification of the public.

(I) The drought contingency plan must include procedures for granting variances to the plan.

(J) The drought contingency plan must include procedures for the enforcement of mandatory water use restrictions, including specification of penalties (example: fines, water rate surcharges, discontinuation of service) for violations of such restrictions.

(2) Privately-owned water utilities. Privately-owned water utilities shall prepare a drought contingency plan in accordance with this section and incorporate such plan into their tariff.

(3) Wholesale water customers. Any water supplier that receives all or a portion of its water supply from another water supplier shall consult with that supplier and shall include in the drought contingency plan appropriate provisions for responding to reductions in that water supply.

(b) A wholesale or retail water supplier shall notify the executive director within five business days of the implementation of any mandatory provisions of the drought contingency plan.

(c) The retail public water supplier shall review and update, as appropriate, the drought contingency plan, at least every five years, based on new or updated information, such as the adoption or revision of the regional water plan.

## **§288.21. Drought Contingency Plans for Irrigation Use.**

(a) A drought contingency plan for an irrigation use, where applicable, must include the following minimum elements.

(1) Minimum requirements. Drought contingency plans for irrigation water suppliers must include policies and procedures for the equitable and efficient allocation of water on a pro rata basis during times of shortage in accordance with Texas Water Code, §11.039. Such plans shall include the following elements as a minimum.

(A) Preparation of the plan shall include provisions to actively inform and to affirmatively provide opportunity for users of water from the irrigation system to provide input into the preparation of the plan and to remain informed of the plan. Such acts may include, but are not limited to, having a public meeting at a time and location convenient to the water users and providing written notice to the water users concerning the proposed plan and meeting.

(B) The drought contingency plan must document coordination with the regional water planning groups to ensure consistency with the appropriate approved regional water plans.

(C) The drought contingency plan must include water supply criteria and other considerations for determining when to initiate or terminate water allocation procedures, accompanied by an explanation of the rationale or basis for such triggering criteria.

(D) The drought contingency plan must include specific, quantified targets for water use reductions to be achieved during periods of water shortage and drought. The entity preparing the plan shall establish the targets. The goals established by the entity under this subparagraph are not enforceable.

(E) The drought contingency plan must include methods for determining the allocation of irrigation supplies to individual users.

(F) The drought contingency plan must include a description of the information to be monitored by the water supplier and the procedures to be followed for the initiation or termination of water allocation policies.

(G) The drought contingency plan must include procedures for use accounting during the implementation of water allocation policies.

(H) The drought contingency plan must include policies and procedures, if any, for the transfer of water allocations among individual users within the water supply system or to users outside the water supply system.

(I) The drought contingency plan must include procedures for the enforcement of water allocation policies, including specification of penalties for violations of such policies and for wasteful or excessive use of water.

(2) Wholesale water customers. Any irrigation water supplier that receives all or a portion of its water supply from another water supplier shall consult with that supplier and shall include in the drought contingency plan, appropriate provisions for responding to reductions in that water supply.

- (3) Protection of public water supplies. Any irrigation water supplier that also provides or delivers water to a public water supplier(s) shall consult with that public water supplier(s) and shall include in the plan, mutually agreeable and appropriate provisions to ensure an uninterrupted supply of water necessary for essential uses relating to public health and safety. Nothing in this provision shall be construed as requiring the irrigation water supplier to transfer irrigation water supplies to non-irrigation use on a compulsory basis or without just compensation.
- (b) Irrigation water users shall review and update, as appropriate, the drought contingency plan, at least every five years, based on new or updated information, such as adoption or revision of the regional water plan.

## **§288.22. Drought Contingency Plans for Wholesale Water Suppliers.**

- (a) A drought contingency plan for a wholesale water supplier must include the following minimum elements.
- (1) Preparation of the plan shall include provisions to actively inform the public and to affirmatively provide opportunity for user input in the preparation of the plan and for informing wholesale customers about the plan. Such acts may include, but are not limited to, having a public meeting at a time and location convenient to the public and providing written notice to the public concerning the proposed plan and meeting.
- (2) The drought contingency plan must document coordination with the regional water planning groups for the service area of the wholesale public water supplier to ensure consistency with the appropriate approved regional water plans.
- (3) The drought contingency plan must include a description of the information to be monitored by the water supplier and specific criteria for the initiation and termination of drought response stages, accompanied by an explanation of the rationale or basis for such triggering criteria.
- (4) The drought contingency plan must include a minimum of three drought or emergency response stages providing for the implementation of measures in response to water supply conditions during a repeat of the drought-of-record.
- (5) The drought contingency plan must include the procedures to be followed for the initiation or termination of drought response stages, including procedures for notification of wholesale customers regarding the initiation or termination of drought response stages.
- (6) The drought contingency plan must include specific, quantified targets for water use reductions to be achieved during periods of water shortage and drought. The entity preparing the plan shall establish the targets. The goals established by the entity under this paragraph are not enforceable.
- (7) The drought contingency plan must include the specific water supply or water demand management measures to be implemented during each stage of the plan including, but not limited to, the following:

- (A) pro rata curtailment of water deliveries to or diversions by wholesale water customers as provided in Texas Water Code, §11.039; and
  - (B) utilization of alternative water sources with the prior approval of the executive director as appropriate (example: interconnection with another water system, temporary use of a non-municipal water supply, use of reclaimed water for non-potable purposes, etc.).
- (8) The drought contingency plan must include a provision in every wholesale water contract entered into or renewed after adoption of the plan, including contract extensions, that in case of a shortage of water resulting from drought, the water to be distributed shall be divided in accordance with Texas Water Code, §11.039.
- (9) The drought contingency plan must include procedures for granting variances to the plan.
- (10) The drought contingency plan must include procedures for the enforcement of any mandatory water use restrictions including specification of penalties (example: liquidated damages, water rate surcharges, discontinuation of service) for violations of such restrictions.
- (b) The wholesale public water supplier shall notify the executive director within five business days of the implementation of any mandatory provisions of the drought contingency plan.
- (c) The wholesale public water supplier shall review and update, as appropriate, the drought contingency plan, at least every five years, based on new or updated information, such as adoption or revision of the regional water plan.

**SUBCHAPTER C: REQUIRED SUBMITTALS**  
**§288.30**

**STATUTORY AUTHORITY**

The amendment is adopted under TWC, §5.103, which provides the commission with the authority to adopt any rules necessary to carry out its powers and duties under the provisions of the TWC or other laws of this state; and TWC, §11.1271, which provides the commission with the authority to require applicants for a new or amended water right to adopt conservation measures; and TWC, §11.1272, which provides the commission with the authority to require wholesale and retail public water suppliers and irrigation districts to develop drought contingency plans; and Texas Government Code, §2001.006, which authorizes state agencies to adopt rules or take other administrative action that the agency deems necessary to implement legislation.

**§288.30. Required Submittals.**

In addition to the water conservation and drought contingency plans required to be submitted with an application under §295.9 of this title (relating to Water Conservation and Drought Contingency Plans), water conservation and drought contingency plans are required as follows.

- (1) Water conservation plans for municipal, industrial, and other non-irrigation uses. The holder of an existing permit, certified filing, or certificate of adjudication for the appropriation of surface water in the amount of 1,000 acre-feet a year or more for municipal, industrial, and other non-irrigation uses shall develop, submit, and implement a water conservation plan meeting the requirements of Subchapter A of this chapter (relating to Water Conservation Plans). The water conservation plan must be submitted to the executive director not later than May 1, 2005. Thereafter, the next revision of the water conservation plan for municipal, industrial, and other non-irrigation uses must be submitted not later than May 1, 2009, and every five years after that date to coincide with the regional water planning group. Any revised plans must be submitted to the executive director within 90 days of adoption. The revised plans must include implementation reports. The requirement for a water conservation plan under this section must not result in the need for an amendment to an existing permit, certified filing, or certificate of adjudication.
- (2) Implementation report for municipal, industrial, and other non-irrigation uses. The implementation report must include:
  - (A) the list of dates and descriptions of the conservation measures implemented;
  - (B) data about whether or not targets in the plans are being met;
  - (C) the actual amount of water saved; and
  - (D) if the targets are not being met, an explanation as to why any of the targets are not being met, including any progress on that particular target.
- (3) Water conservation plans for irrigation uses. The holder of an existing permit, certified filing, or certificate of adjudication for the appropriation of surface water in the amount of 10,000 acre-feet a year or more for irrigation uses shall develop, submit, and implement a

water conservation plan meeting the requirements of Subchapter A of this chapter. The water conservation plan must be submitted to the executive director not later than May 1, 2005. Thereafter, the next revision of the water conservation plan for irrigation uses must be submitted not later than May 1, 2009, and every five years after that date to coincide with the regional water planning group. Any revised plans must be submitted to the executive director within 90 days of adoption. The revised plans must include implementation reports. The requirement for a water conservation plan under this section must not result in the need for an amendment to an existing permit, certified filing, or certificate of adjudication.

(4) Implementation report for irrigation uses. The implementation report must include:

- (A) the list of dates and descriptions of the conservation measures implemented;
- (B) data about whether or not targets in the plans are being met;
- (C) the actual amount of water saved; and
- (D) if the targets are not being met, an explanation as to why any of the targets are not being met, including any progress on that particular target.

(5) Drought contingency plans for retail public water suppliers. Retail public water suppliers shall submit a drought contingency plan meeting the requirements of Subchapter B of this chapter (relating to Drought Contingency Plans) to the executive director after adoption by its governing body. The retail public water system shall provide a copy of the plan to the regional water planning group for each region within which the water system operates. These drought contingency plans must be submitted as follows.

(A) For retail public water suppliers providing water service to 3,300 or more connections, the drought contingency plan must be submitted to the executive director not later than May 1, 2005. Thereafter, the retail public water suppliers providing water service to 3,300 or more connections shall submit the next revision of the plan not later than May 1, 2009, and every five years after that date to coincide with the regional water planning group. Any revised plans must be submitted to the executive director within 90 days of adoption by the community water system. Any new retail public water suppliers providing water service to 3,300 or more connections shall prepare and adopt a drought contingency plan within 180 days of commencement of operation, and submit the plan to the executive director within 90 days of adoption.

(B) For all the retail public water suppliers, the drought contingency plan must be prepared and adopted not later than May 1, 2005 and must be available for inspection by the executive director upon request. Thereafter, the retail public water suppliers shall prepare and adopt the next revision of the plan not later than May 1, 2009, and every five years after that date to coincide with the regional water planning group. Any new retail public water supplier providing water service to less than 3,300 connections shall prepare and adopt a drought contingency plan within 180 days of commencement of operation, and shall make the plan available for inspection by the executive director upon request.

(6) Drought contingency plans for wholesale public water suppliers. Wholesale public water suppliers shall submit a drought contingency plan meeting the requirements of Subchapter B of this chapter to the executive director not later than May 1, 2005, after adoption of the drought contingency plan by the governing body of the water supplier. Thereafter, the wholesale public water suppliers shall submit the next revision of the plan not later than May 1, 2009, and every five years after that date to coincide with the regional water planning group. Any new or revised plans must be submitted to the executive director within 90 days of adoption by the governing body of the wholesale public water supplier. Wholesale public water suppliers shall also provide a copy of the drought contingency plan to the regional water planning group for each region within which the wholesale water supplier operates.

(7) Drought contingency plans for irrigation districts. Irrigation districts shall submit a drought contingency plan meeting the requirements of Subchapter B of this chapter to the executive director not later than May 1, 2005, after adoption by the governing body of the irrigation district. Thereafter, the irrigation districts shall submit the next revision of the plan not later than May 1, 2009, and every five years after that date to coincide with the regional water planning group. Any new or revised plans must be submitted to the executive director within 90 days of adoption by the governing body of the irrigation district. Irrigation districts shall also provide a copy of the plan to the regional water planning group for each region within which the irrigation district operates.

(8) Other submissions. A water conservation plan or drought contingency plan required to be submitted with an application in accordance with §295.9 of this title must also be subject to review and approval by the commission.

(9) Existing permits. The holder of an existing permit, certified filing, or certificate of adjudication shall not be subject to enforcement actions nor shall the permit, certified filing, or certificate of adjudication be subject to cancellation, either in part or in whole, based on the nonattainment of goals contained within a water conservation plan submitted with an application in accordance with §295.9 of this title or by the holder of an existing permit, certified filing, or certificate of adjudication in accordance with the requirements of this section.

## **APPENDIX B:**

# **Model Drought Contingency Plan for Retail Public Water Suppliers**

**Note: This TCEQ-20191 form can be downloaded from the following TCEQ web address.**

**[www.tceq.state.tx.us/comm\\_exec/forms\\_pubs/search\\_forms.html](http://www.tceq.state.tx.us/comm_exec/forms_pubs/search_forms.html)**



# **Drought Contingency Plan for a Retail Public Water Supplier**

Texas Commission on Environmental Quality

**Instructions:** The following form is a model of a drought contingency plan for a retail public water supplier. Not all items may apply to your system's situation. This form is supplied for your convenience, but you are not required to use this form to submit your plan to the TCEQ. Submit completed plans to: Water Supply Division MC 160, TCEQ, P.O. Box 13087, Austin TX 78711-3087.

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(Name of Utility)

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(Address, City, Zip Code)

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(CCN#)

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(PWS #s)

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(Date)

## **Section I: Declaration of Policy, Purpose, and Intent**

In order to conserve the available water supply and protect the integrity of water supply facilities, with particular regard for domestic water use, sanitation, and fire protection, and to protect and preserve public health, welfare, and safety and minimize the adverse impacts of water supply shortage or other water supply emergency conditions, the \_\_\_\_\_ (name of your water supplier) hereby adopts the following regulations and restrictions on the delivery and consumption of water through an ordinance/or resolution (see Appendix C for an example).

Water uses regulated or prohibited under this Drought Contingency Plan (the Plan) are considered to be non-essential and continuation of such uses during times of water shortage or other emergency water supply condition are deemed to constitute a waste of water which subjects the offender(s) to penalties as defined in Section XI of this Plan.

## **Section II: Public Involvement**

Opportunity for the public to provide input into the preparation of the Plan was provided by the \_\_\_\_\_ (name of your water supplier) by means of \_\_\_\_\_ (describe methods used to inform the public about the preparation of the plan and provide opportunities for input; for example, scheduling and providing public notice of a public meeting to accept input on the Plan).

### **Section III: Public Education**

The \_\_\_\_\_ (name of your water supplier) will periodically provide the public with information about the Plan, including information about the conditions under which each stage of the Plan is to be initiated or terminated and the drought response measures to be implemented in each stage. This information will be provided by means of \_\_\_\_\_ (describe methods to be used to provide information to the public about the Plan; for example, public events, press releases or utility bill inserts).

### **Section IV: Coordination with Regional Water Planning Groups**

The service area of the \_\_\_\_\_ (name of your water supplier) is located within the \_\_\_\_\_ (name of regional water planning area or areas) and \_\_\_\_\_ (name of your water supplier) has provided a copy of this Plan to the \_\_\_\_\_ (name of your regional water planning group or groups).

### **Section V: Authorization**

The \_\_\_\_\_ (designated official; for example, the mayor, city manager, utility director, general manager, etc.), or his/her designee is hereby authorized and directed to implement the applicable provisions of this Plan upon determination that such implementation is necessary to protect public health, safety, and welfare. The \_\_\_\_\_, (designated official) or his/her designee, shall have the authority to initiate or terminate drought or other water supply emergency response measures as described in this Plan.

### **Section VI: Application**

The provisions of this Plan shall apply to all persons, customers, and property utilizing water provided by the \_\_\_\_\_ (name of your water supplier). The terms “person” and “customer” as used in the Plan include individuals, corporations, partnerships, associations, and all other legal entities.

### **Section VII: Definitions**

For the purposes of this Plan, the following definitions shall apply:

Aesthetic water use: water use for ornamental or decorative purposes such as fountains, reflecting pools, and water gardens.

Commercial and institutional water use: water use which is integral to the operations of commercial and non-profit establishments and governmental entities such as retail establishments, hotels and motels, restaurants, and office buildings.

Conservation: those practices, techniques, and technologies that reduce the consumption of water, reduce the loss or waste of water, improve the efficiency in the use of water or increase the recycling and reuse of water so that a supply is conserved and made available for future or alternative uses.

Customer: any person, company, or organization using water supplied by \_\_\_\_\_  
(name of your water supplier).

Domestic water use: water use for personal needs or for household or sanitary purposes such as drinking, bathing, heating, cooking, sanitation, or for cleaning a residence, business, industry, or institution.

Even number address: street addresses, box numbers, or rural postal route numbers ending in 0, 2, 4, 6, or 8 and locations without addresses.

Industrial water use: the use of water in processes designed to convert materials of lower value into forms having greater usability and value.

Landscape irrigation use: water used for the irrigation and maintenance of landscaped areas, whether publicly or privately owned, including residential and commercial lawns, gardens, golf courses, parks, and rights-of-way and medians.

Non-essential water use: water uses that are not essential nor required for the protection of public, health, safety, and welfare, including:

- (a) irrigation of landscape areas, including parks, athletic fields, and golf courses, except otherwise provided under this Plan;
- (b) use of water to wash any motor vehicle, motorbike, boat, trailer, airplane or other vehicle;
- (c) use of water to wash down any sidewalks, walkways, driveways, parking lots, tennis courts, or other hard-surfaced areas;
- (d) use of water to wash down buildings or structures for purposes other than immediate fire protection;
- (e) flushing gutters or permitting water to run or accumulate in any gutter or street;
- (f) use of water to fill, refill, or add to any indoor or outdoor swimming pools or jacuzzi-type pools;
- (g) use of water in a fountain or pond for aesthetic or scenic purposes except where necessary to support aquatic life;
- (h) failure to repair a controllable leak(s) within a reasonable period after having been given notice directing the repair of such leak(s); and
- (i) use of water from hydrants for construction purposes or any other purposes other than fire fighting.

Odd numbered address: street addresses, box numbers, or rural postal route numbers ending in 1, 3, 5, 7, or 9.

## **Section VIII: Criteria for Initiation and Termination of Drought Response Stages**

The \_\_\_\_\_ (designated official) or his/her designee shall monitor water supply and/or demand conditions on a \_\_\_\_\_ (*example: daily, weekly, monthly*) basis and shall determine when conditions warrant initiation or termination of each stage of the Plan, that is, when the specified “triggers” are reached.

The triggering criteria described below are based on \_\_\_\_\_

*(provide a brief description of the rationale for the triggering criteria; for example, triggering criteria / trigger levels based on a statistical analysis of the vulnerability of the water source under drought of record conditions, or based on known system capacity limits).*

## **Stage 1 Triggers -- MILD Water Shortage Conditions**

### Requirements for initiation

Customers shall be requested to voluntarily conserve water and adhere to the prescribed restrictions on certain water uses, defined in Section VII—Definitions, when

*(describe triggering criteria / trigger levels; see examples below).*

*Following are examples of the types of triggering criteria that might be used in one or more successive stages of a drought contingency plan. One or a combination of such criteria must be defined for each drought response stage, but usually not all will apply. Select those appropriate to your system:*

*Example 1: Annually, beginning on May 1 through September 30.*

*Example 2: When the water supply available to the \_\_\_\_\_ (name of your water supplier) is equal to or less than \_\_\_\_\_ (acre-feet, percentage of storage, etc.).*

*Example 3: When, pursuant to requirements specified in the \_\_\_\_\_ (name of your water supplier) wholesale water purchase contract with \_\_\_\_\_ (name of your wholesale water supplier), notification is received requesting initiation of Stage 1 of the Drought Contingency Plan.*

*Example 4: When flows in the \_\_\_\_\_ (name of stream or river) are equal to or less than \_\_\_\_\_ cubic feet per second.*

*Example 5: When the static water level in the \_\_\_\_\_ (name of your water supplier) well(s) is equal to or less than \_\_\_\_\_ feet above/below mean sea level.*

*Example 6: When the specific capacity of the \_\_\_\_\_ (name of your water supplier) well(s) is equal to or less than \_\_\_\_\_ percent of the well's original specific capacity.*

*Example 7: When total daily water demand equals or exceeds \_\_\_\_\_ million gallons for \_\_\_\_\_ consecutive days of \_\_\_\_\_ million gallons on a single day (example: based on the "safe" operating capacity of water supply facilities).*

*Example 8: Continually falling treated water reservoir levels which do not refill above \_\_\_\_ percent overnight (example: based on an evaluation of minimum treated water storage required to avoid system outage).*

*The public water supplier may devise other triggering criteria which are tailored to its system.*

**Requirements for termination**

Stage 1 of the Plan may be rescinded when all of the conditions listed as triggering events have ceased to exist for a period of \_\_\_\_ (e.g. 3) consecutive days.

**Stage 2 Triggers -- MODERATE Water Shortage Conditions**

**Requirements for initiation**

Customers shall be required to comply with the requirements and restrictions on certain non-essential water uses provided in Section IX of this Plan when \_\_\_\_\_ (*describe triggering criteria; see examples in Stage 1*).

**Requirements for termination**

Stage 2 of the Plan may be rescinded when all of the conditions listed as triggering events have ceased to exist for a period of \_\_\_\_ (example: 3) consecutive days. Upon termination of Stage 2, Stage 1 becomes operative.

**Stage 3 Triggers – SEVERE Water Shortage Conditions**

**Requirements for initiation**

Customers shall be required to comply with the requirements and restrictions on certain non-essential water uses for Stage 3 of this Plan when \_\_\_\_\_ (*describe triggering criteria; see examples in Stage 1*).

**Requirements for termination**

Stage 3 of the Plan may be rescinded when all of the conditions listed as triggering events have ceased to exist for a period of \_\_\_\_ (example: 3) consecutive days. Upon termination of Stage 3, Stage 2 becomes operative.

**Stage 4 Triggers -- CRITICAL Water Shortage Conditions**

**Requirements for initiation**

Customers shall be required to comply with the requirements and restrictions on certain non-essential water uses for Stage 4 of this Plan when \_\_\_\_\_ (*describe triggering criteria; see examples in Stage 1*).

**Requirements for termination**

Stage 4 of the Plan may be rescinded when all of the conditions listed as triggering events have ceased to exist for a period of \_\_\_\_ (example: 3) consecutive days. Upon termination of Stage 4, Stage 3 becomes operative.

## **Stage 5 Triggers -- EMERGENCY Water Shortage Conditions**

### Requirements for initiation

Customers shall be required to comply with the requirements and restrictions for Stage 5 of this Plan when \_\_\_\_\_ (designated official), or his/her designee, determines that a water supply emergency exists based on:

1. Major water line breaks, or pump or system failures occur, which cause unprecedeted loss of capability to provide water service; **or**
2. Natural or man-made contamination of the water supply source(s).

### Requirements for termination

Stage 5 of the Plan may be rescinded when all of the conditions listed as triggering events have ceased to exist for a period of \_\_\_ (example: 3) consecutive days.

## **Stage 6 Triggers -- WATER ALLOCATION**

### Requirements for initiation

Customers shall be required to comply with the water allocation plan prescribed in Section IX of this Plan and comply with the requirements and restrictions for Stage 5 of this Plan when \_\_\_\_\_ (describe triggering criteria, see examples in Stage 1).

Requirements for termination - Water allocation may be rescinded when all of the conditions listed as triggering events have ceased to exist for a period of \_\_\_ (example: 3) consecutive days.

*Note: The inclusion of WATER ALLOCATION as part of a drought contingency plan may not be required in all cases. For example, for a given water supplier, an analysis of water supply availability under drought of record conditions may indicate that there is essentially no risk of water supply shortage. Hence, a drought contingency plan for such a water supplier might only address facility capacity limitations and emergency conditions (example: supply source contamination and system capacity limitations).*

## **Section IX: Drought Response Stages**

The \_\_\_\_\_ (designated official), or his/her designee, shall monitor water supply and/or demand conditions on a daily basis and, in accordance with the triggering criteria set forth in Section VIII of this Plan, shall determine that a mild, moderate, severe, critical, emergency or water shortage condition exists and shall implement the following notification procedures:

## **Notification**

### Notification of the Public:

The \_\_\_\_\_ (designated official) or his/ her designee shall notify the public by means of:

#### *Examples:*

*publication in a newspaper of general circulation,  
direct mail to each customer,  
public service announcements,  
signs posted in public places  
take-home fliers at schools.*

### Additional Notification:

The \_\_\_\_\_ (designated official) or his/ her designee shall notify directly, or cause to be notified directly, the following individuals and entities:

#### *Examples:*

*Mayor / Chairman and members of the City Council / Utility Board  
Fire Chief(s)  
City and/or County Emergency Management Coordinator(s)  
County Judge & Commissioner(s)  
State Disaster District / Department of Public Safety  
TCEQ (required when mandatory restrictions are imposed)  
Major water users  
Critical water users, i.e. hospitals  
Parks / street superintendents & public facilities managers*

*Note: The plan should specify direct notice only as appropriate to respective drought stages.*

## **Stage 1 Response -- MILD Water Shortage Conditions**

**Target:** Achieve a voluntary \_\_\_\_ percent reduction in \_\_\_\_\_ (example: total water use, daily water demand, etc.).

### Best Management Practices for Supply Management:

*Describe additional measures, if any, to be implemented directly by (name of your water supplier) to manage limited water supplies and/or reduce water demand.*

*Examples include: reduced or discontinued flushing of water mains, activation and use of an alternative supply source(s); use of reclaimed water for non-potable purposes.*

Voluntary Water Use Restrictions for Reducing Demand :

- (a) Water customers are requested to voluntarily limit the irrigation of landscaped areas to Sundays and Thursdays for customers with a street address ending in an even number (0, 2, 4, 6 or 8), and Saturdays and Wednesdays for water customers with a street address ending in an odd number (1, 3, 5, 7 or 9), and to irrigate landscapes only between the hours of midnight and 10:00 a.m. and 8:00 p.m to midnight on designated watering days.
- (b) All operations of the \_\_\_\_\_ (name of your water supplier) shall adhere to water use restrictions prescribed for Stage 2 of the Plan.
- (c) Water customers are requested to practice water conservation and to minimize or discontinue water use for non-essential purposes.

**Stage 2 Response -- MODERATE Water Shortage Conditions**

**Target:** Achieve a \_\_\_ percent reduction in \_\_\_\_\_ (example: total water use, daily water demand, etc.).

Best Management Practices for Supply Management:

*Describe additional measures, if any, to be implemented directly by \_\_\_\_\_ (name of your water supplier) to manage limited water supplies and/or reduce water demand. Examples include: reduced or discontinued flushing of water mains, reduced or discontinued irrigation of public landscaped areas; use of an alternative supply source(s); use of reclaimed water for non-potable purposes.*

Water Use Restrictions for Demand Reduction:

Under threat of penalty for violation, the following water use restrictions shall apply to all persons:

- (a) Irrigation of landscaped areas with hose-end sprinklers or automatic irrigation systems shall be limited to Sundays and Thursdays for customers with a street address ending in an even number (0, 2, 4, 6 or 8), and Saturdays and Wednesdays for water customers with a street address ending in an odd number (1, 3, 5, 7 or 9), and irrigation of landscaped areas is further limited to the hours of 12:00 midnight until 10:00 a.m. and between 8:00 p.m. and 12:00 midnight on designated watering days. However, irrigation of landscaped areas is permitted at anytime if it is by means of a hand-held hose, a faucet filled bucket or watering can of five (5) gallons or less, or drip irrigation system.
- (b) Use of water to wash any motor vehicle, motorbike, boat, trailer, airplane or other vehicle is prohibited except on designated watering days between the hours of 12:00 midnight and 10:00 a.m. and between 8:00 p.m. and 12:00 midnight. Such washing, when allowed, shall be done with a hand-held bucket or a hand-held hose equipped with a positive shutoff nozzle for quick rises. Vehicle washing may be done at any

time on the immediate premises of a commercial car wash or commercial service station. Further, such washing may be exempted from these regulations if the health, safety, and welfare of the public is contingent upon frequent vehicle cleansing, such as garbage trucks and vehicles used to transport food and perishables.

- (c) Use of water to fill, refill, or add to any indoor or outdoor swimming pools, wading pools, or jacuzzi-type pools is prohibited except on designated watering days between the hours of 12:00 midnight and 10:00 a.m. and between 8 p.m. and 12:00 midnight.
- (d) Operation of any ornamental fountain or pond for aesthetic or scenic purposes is prohibited except where necessary to support aquatic life or where such fountains or ponds are equipped with a recirculation system.
- (e) Use of water from hydrants shall be limited to fire fighting, related activities, or other activities necessary to maintain public health, safety, and welfare, except that use of water from designated fire hydrants for construction purposes may be allowed under special permit from the \_\_\_\_\_ (name of your water supplier).
- (f) Use of water for the irrigation of golf course greens, tees, and fairways is prohibited except on designated watering days between the hours 12:00 midnight and 10:00 a.m. and between 8 p.m. and 12:00 midnight. However, if the golf course utilizes a water source other than that provided by the \_\_\_\_\_ (name of your water supplier), the facility shall not be subject to these regulations.
- (g) All restaurants are prohibited from serving water to patrons except upon request of the patron.
- (h) The following uses of water are defined as non-essential and are prohibited:
  1. wash down of any sidewalks, walkways, driveways, parking lots, tennis courts, or other hard-surfaced areas;
  2. use of water to wash down buildings or structures for purposes other than immediate fire protection;
  3. use of water for dust control;
  4. flushing gutters or permitting water to run or accumulate in any gutter or street; and
  5. failure to repair a controllable leak(s) within a reasonable period after having been given notice directing the repair of such leak(s).

### **Stage 3 Response -- SEVERE Water Shortage Conditions**

**Target:** Achieve a \_\_\_ percent reduction in \_\_\_\_\_ (example: total water use, daily water demand, etc.).

#### Best Management Practices for Supply Management:

*Describe additional measures, if any, to be implemented directly by \_\_\_\_\_ (name of your water supplier) to manage limited water supplies and/or reduce water demand. Examples include: reduced or discontinued flushing of water mains, reduced or discontinued irrigation of public landscaped areas; use of an alternative supply source(s); use of reclaimed water for non-potable purposes.*

#### Water Use Restrictions for Demand Reduction:

All requirements of Stage 2 shall remain in effect during Stage 3 except:

- (a) Irrigation of landscaped areas shall be limited to designated watering days between the hours of 12:00 midnight and 10:00 a.m. and between 8 p.m. and 12:00 midnight and shall be by means of hand-held hoses, hand-held buckets, drip irrigation, or permanently installed automatic sprinkler system only. The use of hose-end sprinklers is prohibited at all times.
- (b) The watering of golf course tees is prohibited unless the golf course utilizes a water source other than that provided by the \_\_\_\_\_ (name of your water supplier).
- (c) The use of water for construction purposes from designated fire hydrants under special permit is to be discontinued.

### **Stage 4 Response -- CRITICAL Water Shortage Conditions**

**Target:** Achieve a \_\_\_ percent reduction in \_\_\_\_\_ (example: total water use, daily water demand, etc.).

#### Best Management Practices for Supply Management:

*Describe additional measures, if any, to be implemented directly by \_\_\_\_\_ (name of your water supplier) to manage limited water supplies and/or reduce water demand. Examples include: reduced or discontinued flushing of water mains, reduced or discontinued irrigation of public landscaped areas; use of an alternative supply source(s); use of reclaimed water for non-potable purposes.*

Water Use Restrictions for Reducing Demand: All requirements of Stage 2 and 3 shall remain in effect during Stage 4 except:

- (a) Irrigation of landscaped areas shall be limited to designated watering days between the hours of 6:00 a.m. and 10:00 a.m. and between 8:00 p.m. and 12:00 midnight and shall be by means of hand-held hoses, hand-held buckets, or drip irrigation only. The use of hose-end sprinklers or permanently installed automatic sprinkler systems are prohibited at all times.
- (b) Use of water to wash any motor vehicle, motorbike, boat, trailer, airplane or other vehicle not occurring on the premises of a commercial car wash and commercial service stations and not in the immediate interest of public health, safety, and welfare is prohibited. Further, such vehicle washing at commercial car washes and commercial service stations shall occur only between the hours of 6:00 a.m. and 10:00 a.m. and between 6:00 p.m. and 10 p.m.
- (c) The filling, refilling, or adding of water to swimming pools, wading pools, and jacuzzi-type pools is prohibited.
- (d) Operation of any ornamental fountain or pond for aesthetic or scenic purposes is prohibited except where necessary to support aquatic life or where such fountains or ponds are equipped with a recirculation system.
- (e) No application for new, additional, expanded, or increased-in-size water service connections, meters, service lines, pipeline extensions, mains, or water service facilities of any kind shall be approved, and time limits for approval of such applications are hereby suspended for such time as this drought response stage or a higher-numbered stage shall be in effect.

#### **Stage 5 Response -- EMERGENCY Water Shortage Conditions**

**Target:** Achieve a \_\_\_\_ percent reduction in \_\_\_\_\_ (example: total water use, daily water demand, etc.).

#### Best Management Practices for Supply Management:

*Describe additional measures, if any, to be implemented directly by \_\_\_\_\_ (name of your water supplier) to manage limited water supplies and/or reduce water demand. Examples include: reduced or discontinued flushing of water mains, reduced or discontinued irrigation of public landscaped areas; use of an alternative supply source(s); use of reclaimed water for non-potable purposes.*

Water Use Restrictions for Reducing Demand. All requirements of Stage 2, 3, and 4 shall remain in effect during Stage 5 except:

- (a) Irrigation of landscaped areas is absolutely prohibited.

- (b) Use of water to wash any motor vehicle, motorbike, boat, trailer, airplane or other vehicle is absolutely prohibited.

## **Stage 6 Response -- WATER ALLOCATION**

In the event that water shortage conditions threaten public health, safety, and welfare, the \_\_\_\_\_ (designated official) is hereby authorized to allocate water according to the following water allocation plan:

### **Single-Family Residential Customers**

The allocation to residential water customers residing in a single-family dwelling shall be as follows:

<b>Persons per Household</b>	<b>Gallons per Month</b>
1 or 2	6,000
3 or 4	7,000
5 or 6	8,000
7 or 8	9,000
9 or 10	10,000
11 or more	12,000

“Household” means the residential premises served by the customer’s meter. “Persons per household” includes only those persons currently physically residing at the premises and expected to reside there for the entire billing period. It shall be assumed that a particular customer’s household is comprised of two (2) persons unless the customer notifies the \_\_\_\_\_ (name of your water supplier) of a greater number of persons per household on a form prescribed by the \_\_\_\_\_ designated official. The \_\_\_\_\_ (designated official) shall give his/her best effort to see that such forms are mailed, otherwise provided, or made available to every residential customer. If, however, a customer does not receive such a form, it shall be the customer’s responsibility to go to the \_\_\_\_\_ (name of your water supplier) offices to complete and sign the form claiming more than two (2) persons per household. New customers may claim more persons per household at the time of applying for water service on the form prescribed by the \_\_\_\_\_ (designated official). When the number of persons per household increases so as to place the customer in a different allocation category, the customer may notify the \_\_\_\_\_ (name of water supplier) on such form and the change will be implemented in the next practicable billing period. If the number of persons in a household is reduced, the customer shall notify the \_\_\_\_\_ (name of your water supplier) in writing within two (2) days. In prescribing the method for claiming more than two (2) persons per household, the \_\_\_\_\_ (designated official) shall adopt methods to insure the accuracy of the claim. Any person who knowingly, recklessly, or with criminal negligence falsely reports the number of persons in a household or fails to timely notify the \_\_\_\_\_ (name of your water supplier) of a reduction in the number of person in a household shall be fined not less than \$ \_\_\_\_\_.

Residential water customers shall pay the following surcharges:

\$ \_\_\_\_ for the first 1,000 gallons over allocation.  
\$ \_\_\_\_ for the second 1,000 gallons over allocation.  
\$ \_\_\_\_ for the third 1,000 gallons over allocation.  
\$ \_\_\_\_ for each additional 1,000 gallons over allocation.

Surcharge shall be cumulative.

### **Master-Metered Multi-Family Residential Customers**

The allocation to a customer billed from a master meter which jointly measures water to multiple permanent residential dwelling units (example: apartments, mobile homes) shall be allocated 6,000 gallons per month for each dwelling unit. It shall be assumed that such a customer's meter serves two dwelling units unless the customer notifies the \_\_\_\_\_ (name of your water supplier) of a greater number on a form prescribed by the \_\_\_\_\_ (designated official). The \_\_\_\_\_ (designated official) shall give his/her best effort to see that such forms are mailed, otherwise provided, or made available to every such customer. If, however, a customer does not receive such a form, it shall be the customer's responsibility to go to the \_\_\_\_\_ (name of your water supplier) offices to complete and sign the form claiming more than two (2) dwellings. A dwelling unit may be claimed under this provision whether it is occupied or not. New customers may claim more dwelling units at the time of applying for water service on the form prescribed by the \_\_\_\_\_ (designated official). If the number of dwelling units served by a master meter is reduced, the customer shall notify the \_\_\_\_\_ (name of your water supplier) in writing within two (2) days. In prescribing the method for claiming more than two (2) dwelling units, the \_\_\_\_\_ (designated official) shall adopt methods to insure the accuracy of the claim. Any person who knowingly, recklessly, or with criminal negligence falsely reports the number of dwelling units served by a master meter or fails to timely notify the \_\_\_\_\_ (name of your water supplier) of a reduction in the number of person in a household shall be fined not less than \$ \_\_\_\_\_. Customers billed from a master meter under this provision shall pay the following monthly surcharges:

\$ \_\_\_\_ for 1,000 gallons over allocation up through 1,000 gallons for each dwelling unit.  
\$ \_\_\_\_, thereafter, for each additional 1,000 gallons over allocation up through a second 1,000 gallons for each dwelling unit.  
\$ \_\_\_\_, thereafter, for each additional 1,000 gallons over allocation up through a third 1,000 gallons for each dwelling unit.  
\$ \_\_\_\_, thereafter for each additional 1,000 gallons over allocation.

Surcharge shall be cumulative.

## **Commercial Customers**

A monthly water allocation shall be established by the \_\_\_\_\_ (designated official), or his/her designee, for each nonresidential commercial customer other than an industrial customer who uses water for processing purposes. The non-residential customer's allocation shall be approximately \_\_\_\_\_ (e.g. 75%) percent of the customer's usage for corresponding month's billing period for the previous 12 months. If the customer's billing history is shorter than 12 months, the monthly average for the period for which there is a record shall be used for any monthly period for which no history exists. Provided, however, a customer, \_\_\_\_\_ percent of whose monthly usage is less than \_\_\_\_\_ gallons, shall be allocated \_\_\_\_\_ gallons. The \_\_\_\_\_ (designated official) shall give his/her best effort to see that notice of each non-residential customer's allocation is mailed to such customer. If, however, a customer does not receive such notice, it shall be the customer's responsibility to contact the \_\_\_\_\_ (name of your water supplier) to determine the allocation. Upon request of the customer or at the initiative of the \_\_\_\_\_ (designated official), the allocation may be reduced or increased if, (1) the designated period does not accurately reflect the customer's normal water usage, (2) one nonresidential customer agrees to transfer part of its allocation to another nonresidential customer, or (3) other objective evidence demonstrates that the designated allocation is inaccurate under present conditions. A customer may appeal an allocation established hereunder to the \_\_\_\_\_ (designated official or alternatively, a special water allocation review committee). Nonresidential commercial customers shall pay the following surcharges:

Customers whose allocation is \_\_\_\_\_ gallons through \_\_\_\_\_ gallons per month:

\$ \_\_\_\_\_ per thousand gallons for the first 1,000 gallons over allocation.  
\$ \_\_\_\_\_ per thousand gallons for the second 1,000 gallons over allocation.  
\$ \_\_\_\_\_ per thousand gallons for the third 1,000 gallons over allocation.  
\$ \_\_\_\_\_ per thousand gallons for each additional 1,000 gallons over allocation.

Customers whose allocation is \_\_\_\_\_ gallons per month or more:

\_\_\_\_\_ times the block rate for each 1,000 gallons in excess of the allocation up through 5 percent above allocation.  
\_\_\_\_\_ times the block rate for each 1,000 gallons from 5 percent through 10 percent above allocation.  
\_\_\_\_\_ times the block rate for each 1,000 gallons from 10 percent through 15 percent above allocation.  
\_\_\_\_\_ times the block rate for each 1,000 gallons more than 15 percent above allocation.

The surcharges shall be cumulative. As used herein, "block rate" means the charge to the customer per 1,000 gallons at the regular water rate schedule at the level of the customer's allocation.

## **Industrial Customers**

A monthly water allocation shall be established by the \_\_\_\_\_ (designated official), or his/her designee, for each industrial customer, which uses water for processing purposes. The industrial customer's allocation shall be approximately \_\_\_\_\_ (example: 90%) percent of the customer's water usage baseline. Ninety (90) days after the initial imposition of the allocation for industrial customers, the industrial customer's allocation shall be further reduced to \_\_\_\_\_ (example: 85%) percent of the customer's water usage baseline. The industrial customer's water use baseline will be computed on the average water use for the \_\_\_\_\_ month period ending prior to the date of implementation of Stage 2 of the Plan. If the industrial water customer's billing history is shorter than \_\_\_\_\_ months, the monthly average for the period for which there is a record shall be used for any monthly period for which no billing history exists. The \_\_\_\_\_ (designated official) shall give his/her best effort to see that notice of each industrial customer's allocation is mailed to such customer. If, however, a customer does not receive such notice, it shall be the customer's responsibility to contact the \_\_\_\_\_ (name of your water supplier) to determine the allocation, and the allocation shall be fully effective notwithstanding the lack of receipt of written notice. Upon request of the customer or at the initiative of the \_\_\_\_\_ (designated official), the allocation may be reduced or increased, (1) if the designated period does not accurately reflect the customer's normal water use because the customer had shutdown a major processing unit for repair or overhaul during the period, (2) the customer has added or is in the process of adding significant additional processing capacity, (3) the customer has shutdown or significantly reduced the production of a major processing unit, (4) the customer has previously implemented significant permanent water conservation measures such that the ability to further reduce water use is limited, (5) the customer agrees to transfer part of its allocation to another industrial customer, or (6) if other objective evidence demonstrates that the designated allocation is inaccurate under present conditions. A customer may appeal an allocation established hereunder to the \_\_\_\_\_ (designated official or alternatively, a special water allocation review committee). Industrial customers shall pay the following surcharges:

Customers whose allocation is \_\_\_\_\_ gallons through \_\_\_\_\_ gallons per month:

\$\_\_\_\_\_ per thousand gallons for the first 1,000 gallons over allocation.  
\$\_\_\_\_\_ per thousand gallons for the second 1,000 gallons over allocation.  
\$\_\_\_\_\_ per thousand gallons for the third 1,000 gallons over allocation.  
\$\_\_\_\_\_ per thousand gallons for each additional 1,000 gallons over allocation.

Customers whose allocation is \_\_\_\_\_ gallons per month or more:

- \_\_\_\_\_ times the block rate for each 1,000 gallons in excess of the allocation up through 5 percent above allocation.
- \_\_\_\_\_ times the block rate for each 1,000 gallons from 5 percent through 10 percent above allocation.
- \_\_\_\_\_ times the block rate for each 1,000 gallons from 10 percent through 15 percent above allocation.
- \_\_\_\_\_ times the block rate for each 1,000 gallons more than 15 percent above allocation.

The surcharges shall be cumulative. As used herein, "block rate" means the charge to the customer per 1,000 gallons at the regular water rate schedule at the level of the customer's allocation.

## Section X: Enforcement

- (a) No person shall knowingly or intentionally allow the use of water from the \_\_\_\_\_ (name of your water supplier) for residential, commercial, industrial, agricultural, governmental, or any other purpose in a manner contrary to any provision of this Plan, or in an amount in excess of that permitted by the drought response stage in effect at the time pursuant to action taken by \_\_\_\_\_ (designated official), or his/her designee, in accordance with provisions of this Plan.
- (b) Any person who violates this Plan is guilty of a misdemeanor and, upon conviction shall be punished by a fine of not less than \_\_\_\_\_ dollars (\$\_\_\_\_\_) and not more than \_\_\_\_\_ dollars (\$\_\_\_\_\_) . Each day that one or more of the provisions in this Plan is violated shall constitute a separate offense. If a person is convicted of three or more distinct violations of this Plan, the \_\_\_\_\_ (designated official) shall, upon due notice to the customer, be authorized to discontinue water service to the premises where such violations occur. Services discontinued under such circumstances shall be restored only upon payment of a re-connection charge, hereby established at \$\_\_\_\_\_, and any other costs incurred by the \_\_\_\_\_ (name of your water supplier) in discontinuing service. In addition, suitable assurance must be given to the \_\_\_\_\_ (designated official) that the same action shall not be repeated while the Plan is in effect. Compliance with this plan may also be sought through injunctive relief in the district court.
- (c) Any person, including a person classified as a water customer of the \_\_\_\_\_ (name of your water supplier), in apparent control of the property where a violation occurs or originates shall be presumed to be the violator, and proof that the violation occurred on the person's property shall constitute a rebuttable presumption that the person in apparent control of the property committed the violation, but any such person shall have the right to show that he/she did not commit the violation. Parents shall be presumed to be responsible for violations of their minor children and proof that a violation, committed by a child, occurred on property within the parents' control shall constitute a rebuttable presumption that the parent committed the violation, but any such parent may be excused if he/she proves that he/she had previously directed the child not to use the water as it was used in violation of this Plan and that the parent could not have reasonably known of the violation.
- (d) Any employee of the \_\_\_\_\_ (name of your water supplier), police officer, or other \_\_\_\_\_ employee designated by the \_\_\_\_\_ (designated official), may issue a citation to a person he/she reasonably believes to be in violation of this Ordinance. The citation shall be prepared in duplicate and shall contain the name and address of the alleged violator, if known, the offense charged, and shall direct him/her to appear in the \_\_\_\_\_ (example: municipal court) on the date shown on the citation for which the date shall not be less than 3 days nor more than 5 days from the date the citation was issued. The alleged violator shall be

served a copy of the citation. Service of the citation shall be complete upon delivery of the citation to the alleged violator, to an agent or employee of a violator, or to a person over 14 years of age who is a member of the violator's immediate family or is a resident of the violator's residence. The alleged violator shall appear in \_\_\_\_\_ (example: municipal court) to enter a plea of guilty or not guilty for the violation of this Plan. If the alleged violator fails to appear in \_\_\_\_\_ (example: municipal court), a warrant for his/her arrest may be issued. A summons to appear may be issued in lieu of an arrest warrant. These cases shall be expedited and given preferential setting in \_\_\_\_\_ (example: municipal court) before all other cases.

## **Section XI: Variances**

The \_\_\_\_\_ (designated official), or his/her designee, may, in writing, grant temporary variance for existing water uses otherwise prohibited under this Plan if it is determined that failure to grant such variance would cause an emergency condition adversely affecting the health, sanitation, or fire protection for the public or the person requesting such variance and if one or more of the following conditions are met:

- (a) Compliance with this Plan cannot be technically accomplished during the duration of the water supply shortage or other condition for which the Plan is in effect.
- (b) Alternative methods can be implemented which will achieve the same level of reduction in water use.

Persons requesting an exemption from the provisions of this Ordinance shall file a petition for variance with the \_\_\_\_\_ (name of your water supplier) within 5 days after the Plan or a particular drought response stage has been invoked. All petitions for variances shall be reviewed by the \_\_\_\_\_ (designated official), or his/her designee, and shall include the following:

- (a) Name and address of the petitioner(s).
- (b) Purpose of water use.
- (c) Specific provision(s) of the Plan from which the petitioner is requesting relief.
- (d) Detailed statement as to how the specific provision of the Plan adversely affects the petitioner or what damage or harm will occur to the petitioner or others if petitioner complies with this Ordinance.
- (e) Description of the relief requested.
- (f) Period of time for which the variance is sought.
- (g) Alternative water use restrictions or other measures the petitioner is taking or proposes to take to meet the intent of this Plan and the compliance date.
- (h) Other pertinent information.

Variances granted by the \_\_\_\_\_ (name of your water supplier) shall be subject to the following conditions, unless waived or modified by the \_\_\_\_\_ (designated official) or his/her designee:

- (a) Variances granted shall include a timetable for compliance.
- (b) Variances granted shall expire when the Plan is no longer in effect, unless the petitioner has failed to meet specified requirements.

No variance shall be retroactive or otherwise justify any violation of this Plan occurring prior to the issuance of the variance.

## **APPENDIX C:**

### **Example Ordinance & Resolution**

### **Adopting a Drought Contingency Plan**

- **Example Ordinance**
- **Example Resolution**



**EXAMPLE ORDINANCE FOR ADOPTION OF A  
DROUGHT CONTINGENCY PLAN**

**ORDINANCE NO. \_\_\_\_\_**

AN ORDINANCE OF THE CITY OF \_\_\_\_\_, TEXAS,  
ADOPTING A DROUGHT CONTINGENCY PLAN; ESTABLISHING  
CRITERIA FOR THE INITIATION AND TERMINATION OF DROUGHT  
RESPONSE STAGES; ESTABLISHING RESTRICTIONS ON CERTAIN  
WATER USES; ESTABLISHING PENALTIES FOR THE VIOLATION OF  
AND PROVISIONS FOR ENFORCEMENT OF THESE RESTRICTIONS;  
ESTABLISHING PROCEDURES FOR GRANTING VARIANCES; AND  
PROVIDING SEVERABILITY AND AN EFFECTIVE DATE.

WHEREAS, the City of \_\_\_\_\_, Texas recognizes that the amount of water available to the City and its water utility customers is limited and subject to depletion during periods of extended drought;

WHEREAS, the City recognizes that natural limitations due to drought conditions and other acts of God cannot guarantee an uninterrupted water supply for all purposes;

WHEREAS, Section 11.1272 of the Texas Water Code and applicable rules of the Texas Commission on Environmental Quality require all public water supply systems in Texas to prepare a drought contingency plan; and

WHEREAS, as authorized under law, and in the best interests of the citizens of \_\_\_\_\_, Texas, the \_\_\_\_\_ (governing body) deems it expedient and necessary to establish certain rules and policies for the orderly and efficient management of limited water supplies during drought and other water supply emergencies;

NOW THEREFORE, BE IT ORDAINED BY THE CITY OF \_\_\_\_\_, TEXAS:

**SECTION 1.**

That the City of \_\_\_\_\_, Texas Drought Contingency Plan attached hereto as Exhibit "A" and made part hereof for all purposes be, and the same is hereby, adopted as the official policy of the City.

**SECTION 2.**

That all ordinances that are in conflict with the provisions of this ordinance be, and the same are hereby, repealed and all other ordinances of the City not in conflict with the provisions of this ordinance shall remain in full force and effect.

SECTION 3.

Should any paragraph, sentence, subdivision, clause, phrase, or section of this ordinance be adjudged or held to be unconstitutional, illegal or invalid, the same shall not affect the validity of this ordinance as a whole or any part or provision thereof, other than the part so declared to be invalid, illegal or unconstitutional.

SECTION 4.

This ordinance shall take effect immediately from and after its passage and the publication of the caption, as the law in such cases provides.

DULY PASSED BY THE CITY OF \_\_\_\_\_, TEXAS, on the \_\_\_\_\_ day of  
\_\_\_\_\_, 20\_\_.

APPROVED:

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MAYOR

ATTESTED TO:

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CITY SECRETARY

APPROVED AS TO FORM:

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CITY ATTORNEY

**EXAMPLE RESOLUTION FOR ADOPTION OF A  
DROUGHT CONTINGENCY PLAN**

**RESOLUTION NO. \_\_\_\_\_**

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE  
\_\_\_\_\_ (name of your water supplier) ADOPTING A  
DROUGHT CONTINGENCY PLAN.

WHEREAS, the Board recognizes that the amount of water available to the \_\_\_\_\_ (name of your water supplier) and its water utility customers is limited and subject to depletion during periods of extended drought;

WHEREAS, the Board recognizes that natural limitations due to drought conditions and other acts of God cannot guarantee an uninterrupted water supply for all purposes;

WHEREAS, Section 11.1272 of the Texas Water Code and applicable rules of the Texas Commission on Environmental Quality require all public water supply systems in Texas to prepare a drought contingency plan; and

WHEREAS, as authorized under law, and in the best interests of the customers of the \_\_\_\_\_ (name of your water supplier), the Board deems it expedient and necessary to establish certain rules and policies for the orderly and efficient management of limited water supplies during drought and other water supply emergencies;

NOW THEREFORE, BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE  
\_\_\_\_\_ (name of your water supplier):

SECTION 1. That the Drought Contingency Plan attached hereto as Exhibit "A" and made part hereof for all purposes be, and the same is hereby, adopted as the official policy of the \_\_\_\_\_ (name of your water supplier).

SECTION 2. That the \_\_\_\_\_ (example: general manager) is hereby directed to implement, administer, and enforce the Drought Contingency Plan.

SECTION 3. That this resolution shall take effect immediately upon its passage.

DULY PASSED BY THE BOARD OF DIRECTORS OF THE \_\_\_\_\_, ON THIS  
\_\_\_\_ day of \_\_\_\_\_, 20\_\_.

\_\_\_\_\_  
President, Board of Directors

ATTESTED TO:

\_\_\_\_\_  
Secretary, Board of Directors

